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ORIGINAL ARTICLES.

PERISCOPIC SPECTACLES.*

By John Green, M.D.,
ST. LOUIS, MO.

The occasion of these elementary remarks is the recent extended exploitation, by manufacturing opticians, of concavo-convex or meniscus spectacle lenses ground to a deeper concavity than that of the periscopic glasses previously in vogue in the trade.

The concavo-convex or meniscus form for spectacle lenses was recommended by Wollaston, about the beginning of the nineteenth century. The recognized advantage of lenses of this configuration is in minimizing the defective definition resulting from oblique excentrical refraction through a lens mounted immovably in a spectacle frame in front of the movable eyeball.

A concave spherical surface of about 3 *centimetres* radius, with its centre of curvature at the centre of rotation of the eyeball, will be normal to the visual axis at a distance of 14 *millimetres* to 17.5 *millimetres* in front of the vertex of the cornea in whatever direction the eye may be rotated. A plano-concave lens of 3 *centimetres* radius of curvature and an approximate power of —16 *dioptries,* presents, therefore, about the maximum concavity compatible with the conditions under which spectacles are worn.

If we grind the front of such a lens to a convex surface con-

*Remarks made before the St. Louis Ophthalmological Society, November 9, 1908.

centric with the concave surface (*i. e.*, with a radius of 3 *centimetres* plus the thickness of the lens), we get a lens of ideal periscopic form but of zero power, as in protective watch-glass or "coquille" spectacles in which the two nodal points fall together in a single nodal point or "centre" at the common centre of curvature of the two surfaces.

Whenever the radius of curvature of the anterior (convex) surface is taken either less or greater than that of the "coquille" lens of zero power, the resultant meniscus or concavo-convex lens will be of a power (positive or negative) represented approximately by the difference of the respective powers of the two plano-spherical lenses of which it may be regarded as built up.

Every concavo-convex or meniscus lens, other than a "coquille" glass of zero power, has a pair of nodal points which fall outside the body of the lens. In the case of a concavo-convex lens of negative power the two nodal points lie in the direction of the centre of curvature of the concave surface. In the case of a meniscus, of positive power, the nodal points lie in front of the convex surface. It follows that the effective power of the negative concavo-convex lens is equivalent to that of a double-concave lens of the same actual power held nearer to the eye, and is therefore somewhat less than that of a double-concave lens of the same power mounted at the same distance from the cornea. Conversely, the effective power of the meniscus is equivalent to that of a double-convex lens of the same actual power held further from the eye, and is therefore somewhat greater than that of a double-convex lens of the same power mounted at the same distance from the cornea. In the case of spectacle lenses of high power these differences in effective power, as determined by the form of the lens, are too great to be neglected; hence in tentative corrections in high grades of ametropia it is important to make use of trial-lenses of approximately the form which it is intended to prescribe, and, in prescribing, to specify the values of the two surfaces, respectively. A prescription in terms of plus and minus dioptries will be intelligible to the practical optician.

To build up trial-lenses in periscopic or other required form the lenses of the trial-case should be all of plano-convex and plano-concave configuration. With a complete series of such trial-lenses any required combination of spherical surfaces may be made up of two lenses placed flat to flat in a trial-frame. With a full series of plano-cylindrical lenses it is also possible to build

up many astigmatic corrections in approximately periscopic form by combining a convex or concave spherical with a concave or convex cylindrical surface. To meet general requirements involved in the correction of ametropia with astigmatism by a dual combination of trial-glasses a certain number of glasses of toric configuration must be provided. These may be in deep plano-concave form of a mean concavity equal to that required for the surface next the eye. About eight such toric lenses, representing differences of from one to eight dioptries in the two principal meridians, may suffice in most cases.

A special advantage presented by lenses with a deep concave surface next the eye is in improving definition through the lower part of the lens when the same glasses are worn for distance and in reading; also in permitting a reading segment to be applied to the back of the lens at the most favorable angle of inclination.

The availability of lenses of the meniscus form in hypermetropia, and especially in aphakia, is notably limited by the fact that whenever the concavity of the surface next the eye is taken deep enough to meet the full periscopic indication the convexity of the anterior surface must be taken so much greater as to be often unpleasantly conspicuous. Nevertheless, even in extreme cases, it is often possible to prescribe a lens, in a plano-convex or meniscus form, which may be distinctly preferred to a double-convex lens of equivalent power. The plan of grinding the required convex-surface on the front of a concave plano-cylindrical or plano-toric lens, and the expedient, suggested many years ago by E. G. Loring, of cementing a circular plano-convex lens on the front of a plano-cylindrical lens in aphakia complicated with astigmatism, may be adopted with advantage in particular cases. In general, the possibility of prescribing an approximately periscopic correction in cases in which it may be impracticable to realize the full indication, also the occasional advantage of grinding a flatter upper area, suited to the requirements in distant vision, on the convex surface of a meniscus or other convex lens chosen for reading, should be kept in mind.

Any double-concave lens in which the anterior surface is made flatter than the posterior surface embodies something of the periscopic principle; also any double-convex lens with its posterior surface flatter than its anterior surface offers some advantage over a lens in which the two convex surfaces are of equal radii. In very high grades of myopia, and especially in aphakia, a plano-

concave or a plano-convex lens may afford the nearest practicable approximation to a periscopic correction. In such cases an added cylindrical surface affords the means of correcting any astigmatism that may be present.

Concavo-convex and meniscus lenses are kept in stock by opticians in three grades representing powers of —1.25D., —3.D., and —6.D., respectively, at the concave surface. The first grade, known to the trade as "periscopic," differs but little in effect from the plano-spherical form and is often used interchangeably with lenses of the bi-convex or bi-concave form with inappreciable advantage or disadvantage. The two higher grades, sold generally under the misleading name of "toric" lenses, offer a distinct advantage when worn habitually for distance and in reading, and also in cases in which a reading segment is added at the back of the lens.

Trial-cases composed wholly of plano-convex and plano-concave lenses in spherical as well as cylindrical form are procurable at a cost not greatly in excess of that of collections of equal scope as quoted in the trade catalogues. The unsurpassed facilities of the American Optical Company, at Southbridge, Massachusetts, have been utilized in making up the collection now shown in illustration of this communication.

MYOPIA AND ITS PREVENTION.

Best (*Muenchener Med. Wochenschrift,* July 21) ascribes the development of myopia to two factors, near work, and a predisposition caused, it may be, by a faulty elasticity of the choroid at the posterior pole of the eye, by thinness of the sclera, which in many cases is correlative to the faulty development of the choroid, which in turn is often correlative with insufficient power of accommodation and convergence, and by the preponderance of the longitudinal portion of the ciliary muscles over the circular. The proportion borne by these two factors in the production of myopia in any given case cannot be readily determined.—*N. Y. Med. Jr.*

THE HISTORY OF THE MANAGEMENT OF THE BLIND IN JAPAN.*

By Professor Dr. Komoto,
TOKIO, JAPAN.

Translated by Adolf Alt, M.D.

The historical development of the management of our blind, as is well known, is so peculiar, that it may be of some general interest.

Since the beginning of it is related to an unfortunate Prince Hitoyasu (830-872) I want to dwell shortly on the story of his malady. He was born the fourth son of the emperor Nimme-Tenno in 830 and was so unfortunate as to lose his eyesight in his 28th year of life. Suffering and sorrow prompted him to renounce his official positions in the year following and to withdraw himself to his quiet villa in the village of Yamashina near Kioto. There he lived as a lone monk and according to buddhist custom took on the name Hoshio-Sensi. He spent his time with literature and music, especially with the biva, a kind of guitarre similar to the European one which formerly was greatly liked among the courtiers. From the great sympathy which on account of his own malady he felt for all the blind he ordered that during his life even the income from his estates in the three southern provinces on the island of Kinshiu should be divided among the blind. He died February 17th, 872, 42 years old, and was buried near Iashima. Soon after his death, in 885 he was sainted with the holy name of Tenyason. Ever since the 17th of February is a holiday for the blind, as also the 17th of June, the day on which the mother of the prince had died. It is said that to-day even the prince is adored as the Saint Tenyason in a temple at Iamashima and in a small chapel at Kioto.

Since that time the blind have formed an organization by themselves, a sort of caste, which goes by the name of Todoha and which the blind could join only under a certain condition. This caste at first seemed to develop in a healthy manner; soon (in 886) certain degrees in rank were introduced, and the titles of Kengio, Koto, Sato, etc., are still in existence among the blind. The blind in the caste had enjoyed the beneficence of Prince Hitoyason for a long time when at the time of Emperor Gotoba-Tenno (1183) it was taken from them. At the time of

*Klinische Monatsbl. fuer Augenhlk, September, 1908.

Emperor Shiodio-Tenno (1230) through the influence of the high Tendai-priest Shiobützu, who had become blind when young and who by his fine biva playing and singing had become a great favorite of the emperor, laws were enacted by which a certain part of the imperial income was distributed among the blind on the occasions of a birth, marriage, coronation, etc. The original three degrees of rank were soon divided into 16 lesser degrees, the first rank Kengio into 4, the second Koto into 8 and the third Sato into 4 classes. Later even 74 lesser degrees were introduced which was probably due to the fact that instead of proficiency in art being the criterion, rank and degree could be bought. Such an organization needed, of course, a management. In reality already in the 12th century a special building was erected in Kioto for the supreme managers of the blind (oshiuko-jashiki) and business was conducted by 10 Kengio (called juro, the ten old men) and by a supreme Kengio (called Sokengio) to whom were added four more Kengios for the financial department. The then very renowed Kengio Jioici was elected supreme Kengio.

Since the present capital Tokio grew to be very powerful with the founding of the Tokugawa-Shiogun dynasty with the beginning of the 17th century, it is not astonishing that already at the end of the 17th century an independent management was established for the Kanto provinces (8 provinces in the neighborhood of Tokio) by the then renowned Kengio Sugijama Waici. This was subject to the one at Kioto and at every important occasion orders had to be called for from Kioto. It is peculiar that both of these managements were given privileges above judicial right, life and death only were not under their jurisdiction. Among the punishments were one very peculiar one, namely, that the blind prisoner had to learn Chinese writing. Such a legal power brought it about that at an audience before the emperor or the shiogun the supreme Kengio could appear with 72 compagnons and could fight with the high officials for place. It is also natural that many powerful Kengio used their position to enrich themselves in a princely manner. The public dress and the cane were determined according to rank. For instance, a Kengio had a purple mantle and a black lackered cane with a T-shaped handle, a Koto a black mantle and a black cane ending in a beak, a Sato a white mantle and a black cane topped off by a ball.

Aside from this blind caste a small association existed solely of blind monks, named Moso-ha. Their management was in

the hands of the Tendia sect, whose chief seat was in the temple on the holy Hiye mountain in Kioto. These monks, biva in hand, would go from house to house and sing prayers for the welfare of the country and the family.

All of these organizations with such a long historical development of necessity lost their existence when in 1868 the political upheaval broke up the State. They never revived and the blind who thus far could quietly enjoy their lives on account of their privileges were now forced to compete with the seeing. This, of course, made their life a very hard one, and a discussion has taken place in parliament as to again allowing the blind certain privileges.

In order to explain more fully the inner character of our blind caste I must mention a few celebrated Kengio, who left behind them schools of music, acupuncture, massage, etc. In the 13th century the Tendia-priest Shiobüzu above mentioned, excelled in the biva music, the secret of which he left to his pupils. From his school came the celebrated Kengio Jioici, also mentioned above, who lived in the beginning of the 14th century; his name was exalted not alone on account of his art, but also on account of his noble origin from Zikushi (the present island Kiushiu). Two among his pupils deserve special mention; one of these, Iasaka Genijo, was the founder of the Iasaka school, the other, Banto Ioici, the father and founder of the later school, which became a very powerful one through the renowned Kengio Kakuici, a nephew of the then Shiogun Ashikasa Takausi, and later on through the influence of the celebrated biva player, Kengio Takenaga (beginning of the 15th century). Hence the end syllables "ici" of the given name (which in Japanese stands behind the family name) are still very frequently found among the blind, to show that they come from the "Icikata" (Ici-school). Out of the many Kengio, Sugijama Waici, who was very renowned by his acupuncture, was, perhaps, the most influential one; he founded the school (Sugijama-Riu) which is still in existence. In intelligence and scholarly qualities, however, our Kengio Hanava Hokiici (1746-1822) surpassed all other celebrities. His biographers, full of admiration, called him rightfully "the king of the blind."

If Europe has among her blind celebrated names, like those of Saunderson, Fawcett, etc., we have a splendid representative in our Kengio Hanava. Born the son of a poor farmer in 1746, he had the misfortune to lose both eyes in his fifth year. But

by his genius and force of will he became one of the greatest scholars that ever were born in Japan. The number of books he wrote must be called astonishing; but especially by his monumental work "Gunshio Ruisiu" he has made his name immortal in Japanese literature. He also founded a school for the reading of the Japanese literature (1793) which even long after his death exerted its influence on our mental life. The following little story is still related of him: As one evening the light was blown out by the wind during the lecture, the students asked him to rest for a moment, when he exclaimed, "Woe to him who has eyes to see!" He died 77 years old in September, 1822, and was mourned by all.

Formerly the blind were occupied chiefly with playing the biva and singing; but since biva playing gradually went out of style, since the end of the 16th century, Koto and Siamisen have taken its place (both string instruments). Koto playing became especially fashionable through the celebrated Kengio Iatsuhashi and in such a manner that to this day it is almost solely taught by blind teachers, while the siamisen, which came from the southern ocean, was soon very popular among the lower classes, something like the mandolin in Italy, which prevented the blind from having occasion to teach it.

Acupuncture, combined with the art of applying setons since olden times was an especially favored occupation of the blind.

It was an old remedy against colic, cardialgia, lumbago, muscular rheumatism, etc., and had in antiquity come to us from China. At least we find already in Ishino, a big medical work which was written in 984, a special chapter on acupuncture, setons, massage, etc., and even such titles as needle doctor or needle professor; but this art had gradually been forgotten. In the beginning of the the 16th century only a Chinese physician, Kanamori, brought the art with him and revived it here. A book Shinkiu-Shiujo written by the celebrated physician, Manase, was, perhaps, even more influential in this direction. Thus the art of acupuncture and setons flourished to a certain extent already at the beginning of the 17th century through several celebrated specialists like the physicians Iriji, Joshida, Misono and others. Misono as the first had the needles made of gold and furthermore, instead of entering the needle by turning and twisting, he made use of a small hammer. Yet only at the end of the 17th century acupuncture was generally adopted through the influence of Kengio Sugijama Waici, above mentioned. He introduced as new into

the needle art the method of entering the needle within a small tube and to tap the needle head lightly with the finger. He made use of his influence and of the favor of the Shiogun Zunajoshi whom he is said to have cured by means of his art from a chronic disease, in order to institute an independent management in Tokio of which he was the first president and to found a school of his own Sugijama Riu. On account of his celebrity the sick and students had come from all regions and thus henceforth acupuncture spread rapidly among the people. Even now one may once in a while meet with an announcement on a sign on which are in big letters the words, "Acupuncture according to Sugijama-Riu."

Massage is one of the most wide-spead and profitable occupations of the blind, since the Japanese are very fond of it at every occasion, as after a bath, after exhaustion and in the treatment of all sorts of diseases. In the beginning, having been introduced into Japan in the 8th century, massage was not as far developed as in later times and its use was very limited. It was revived only at the beginning of the 17th century by the physician Hajoshi Masakatzu and introduced into medicine as a therapeutically effective practice by the physician Kagawa Shiunan. A hundred years ago the physician Fusibayashi Riohaku helped the general adoption of massage a great deal by his book (Ammatebiki, i. e., Compagnon for massage) and by his introducing several new methods. By the physician Oda Shinsai massage was recommended especially against different abdominal affections under the new name of "Ampuk." Thanks to the energy of all these men massage spread through Japan to such an extent that still in every part of a city and in every little hamlet a few blind masseurs (Amma) can be found. Especially in the bathing places on summer evenings several blind with stick in hand may be seen walking up and down the street, blowing with the mouth a monotonous note on a simple bamboo flute and calling out long and loudly Amma Kamishimo. The best masseurs, however, remain at home and wait till they are asked by the customers, which, of course, increases their pay.

Formerly there existed no law regulating the education of blind sons, yet, the blind trying to enter the blind caste had to show a certain education and ability in the profession they intended to follow publicly. Thus in a law promulgated in November, 1776, we find paragraphs stating how blind pupils should get their special education in music, acupuncture and massage from

a Kengio, and how they had to subordinate themselves to the laws of the blind management, while the blind who lived at home or just served another person, could remain outside of this law. This system remained more or less unaltered till the fall of the Tokugawa dynasty, through which all our social order, whether good or bad, was changed throughout. But with the restoration already (1868) new light came into our field. We find in the report of the envoy who had been sent to France in 1865 a short mention of the teaching in the Paris blind institute, especially on point writing, which seems to have impressed the high dignitary immensely. Soon after the restoration in 1875 several philanthropists like Mr. Tsuda, Furukawa, Nakamura, Kishida, Dr. Burhard, Dr. Henry Fauld joined together and formed a society called Rakusenkai, which had for its object to found at Tokio a school for the blind and the deaf mutes. Meanwhile Mr. T. Furukawa had with his own means and by himself founded an institution for teaching the blind and deaf mute. The blind school of Tokio got its charter in 1879 only. This was followed by others so that now there are 41 such schools which with a few exceptions are dependent on purely private means. Some have been founded by foreign missionaries, as for instance at Sendai and Yokohama. In the latter place there is said to be also a school for blind prisoners. In teaching the European point writing is used, which, however, after several trials, has been modified somewhat and simplified according to our own alphabet by Mr. Ishikava. Practical education is given in music, acupuncture and massage and is preceded by a short course in anatomy and physiology.

The teachers of the blind have for some years held a regular annual meeting, this year for instance, in Kioto in the beginning of April, and the blind have among themselves a union, called "Nippon-mosin-kai" (Japanese Blind Union), while the blind here in Tokio have a special union of their own, and also hold an annual meeting, this year at Hongansi in Tsukisi.

Three newspapers cater to the entertainment and teaching of the blind. One called Akebono, that is dawn of morning, appears bi-weekly, the other two, the Hoshinohikari in Tokio and the Tensikai in Kioto, appear monthly.

Herewith I believe to have detailed in short the history of the management of the blind in our country from the 9th century till to-day. To whoever feels a special interest in this question I recommend to read the following books in translation: Komo-

shiakai-shi, this gives only the old history of the blind; Mosin-Kioiku, this details in a short and clear manner the old history and the present condition of the education of the blind; Hanava Kenigio-den, this is the biography of the celebrated Kengio Hanava.

To whoever desires a clear picture of the present education of the blind I recommend very highly a booklet written in the English language called "A short account of the Tokio Blind and Dumb School."

OCULAR REACTION TO TUBERCULIN.

Frederick Tice (*Jr. A. M. A.,* June 13), from a review of reported cases and of his own suggests the following conclusions:

1. As a diagnostic method Calmette's test is by no means positive or even specific. In a varying proportion of tuberculous cases of various forms a positive reaction will occur, but not in all. In differential diagnosis it can be of but limited service as it appears, apparently, in non-tuberculous affections. When the subcutaneous use of tuberculin in doubtful cases of tuberculosis is not possible on account of fever the ocular test may be employed. In my incipient cases in which an early positive diagnosis was most desired it was of no service.

2. Wolff-Eisner and Teichmann have employed and suggest the reaction as a means of prognosis. They determined that when an active reaction took place in patients in the incipient and early stages of tuberculosis it indicated an active effort at protection and consequently was a favorable sign. A weak, slow reaction was found in the far advanced, in the first and second stages, when the resistance was poor. When no reaction took place it indicated that the resistance was still less. It would appear to me that a diagnostic means of so little value can have still less value as a means of prognosis.

3. In a review of the literature no reference is made to the therapeutic possibilities in this method of administering tuberculin. The absorption by the conjunctiva is rapid and considerable, as can be demonstrated in the use of other drugs. Just what effect ocular administration of tuberculin has on the powers of resistance as indicated by the opsonic index has not been determined. If the ocular reaction is analogous to the local or

general reaction produced by subcutaneous injections of tuberculin, and it is found feasible to administer it in this manner, it may be found necessary to avoid the pronounced and severe reactions.

4. Concerning the cause of the reaction I have nothing definite to offer, as the work along this line has not yet been sufficient. Wolff-Eisner and Teichmann in their work in determining the prognostic value of the test, consider the presence and intensity of the reaction due to the development of an endotoxin. Smithies and Walker have suggested that the inflammatory reaction in the eye is produced by the action of endotoxins which are liberated by the action of the antibodies on the dead bacilli in the eye. As the reaction occurs apparently in patients in whom no tuberculosis can be demonstrated it may, like the reaction from subcutaneous use of tuberculin, belong to the "group reactions."

5. From all we can now judge, the ocular reaction to tuberculin must be considered simply as confirmatory and must always be considered secondary to the findings as determined by a careful physical examination.

ERRORS OF THE REFRACTION AND BALANCE OF THE EYES AND THEIR BEARING UPON THE GENERAL HEALTH.

John R. Shannon (*American Medicine,* May, 1908) in discussing this subject emphasizes the following facts:

(1) That there are many headaches which are due indirectly to disorders of the refractive or accommodative apparatus of the eye.

(2) That in these instances the brain symptom is often the most prominent and sometimes the sole prominent symptom of the eye troubles, so that while there may be no pain or sense of fatigue in the eye, the strain with which it is used may be interpreted solely by occipital or frontal headache.

(3) That the long continuance of eye troubles may be the unsuspected source of insomnia, vertigo, nausea and general failure of health.

(4) That in many cases the eye trouble becomes suddenly mischievous owing to some failure of the general health, or to an increased sensitiveness of the brain from moral or mental causes.

MEDICAL SOCIETIES.

OPHTHALMIC SECTION

OF THE ST. LOUIS MEDICAL SOCIETY.

DR. A. E. EWING, presiding.

Meeting April 8, 1908.

[Continued from last issue.]

Specimen of intra-ocular sarcoma.—By Dr. Carl Barck.

I demonstrate this specimen, because it presents a rare type of choroidal sarcoma.

The history is briefly as follows: The patient is a gentleman, 52 years of age. About a year ago, he noticed accidentally, that he could not see with his left eye. Was treated somewhere else for detachment of the retina. He consulted me on the 6th of February. Outer portion of the vitreous fairly transparent. In upper nasal quadrant the tumor, which reached close to the lens from behind, could be plainly seen by oblique illumination as well as with the ophthalmoscope. Its sharp circumscribed outlines, considerable projection into the space of the vitreous, want of motion of the overlying retina, made the diagnosis a simple one. The transillumination showed a striking difference when tested from the nasal and the temporal side respectively.

Enucleation next morning.

In the upper part, which was used for microscopical sections, the tumor was not in connection with the choroid; this latter lined the sclera and was normal. Also on the portion passed around, it seems that the tumor is not adherent to the choroid, whilst it is in connection with the detached retina. As a matter of course, there must be a pedicle somewhat farther down, as we know none but choroidal tumors at the age of the patient. Such roundish, sharply circumscribed choroidal sacroma are rare; it is the first specimen of this type I have come across. Mostly the sarcomata of the choroid have a broad base and a lobate, cauliflower-like surface. In Kerschbaumer's monograph I could not find a similar picture. Dr. Alt told me that he has seen a few similar specimens.

The section shows that we have to deal with a small round-cell sarcoma. According to the usual terminology it would be called a leuko-sarcoma. But also in these a number of pigment cells are invariably found and you find the same in this specimen, especially in and around the blood-vessels which are quite numerous.

DISCUSSION.

Dr. Henry Muetze thought the result as good as he had ever seen. He had reported a case several months ago in which he had removed a piece of steel from the vitreous, but the result had not been nearly as good, especially so far as vision was concerned. The X-ray located the piece of steel very readily and the next day he had removed it under cocaine anæsthesia. Three attempts had to be made before it could be removed. In the first two attempts the piece was brought at right angles to the scleral wound and slipped back. He had read recently of a little instrument made of aluminum to separate the scleral wound in a case of this kind and it seemed that such an instrument would be of advantage. When the patient was discharged at about the end of the month the pupils were widely dilated. The patient was put on mixed treatment and two months later presented himself with an iridocyclitis. There was pain, sensitiveness to light, and the scar was drawn inward a little. When discharged he had been able to count fingers at ten inches, two months later he could note only the movement of the hand at a distance of twelve inches. He was unwilling to have the eye removed and was sent home with instruction to return if he had further trouble. That was in November and the speaker had not seen him since.

Dr. Ernst Saxl said that the results, when at all successful, were usually very good. He had seen, about three years ago, the best result in such a case that had ever come to his notice. The patient was brought to the office about three hours after the injury. The foreign body could not be located by the ophthalmoscope or in any other way, until it was located by means of the giant magnet. At the second or third attempt the foreign body came out through the opening where it had entered. There was scarcely any pain following its removal and three months later the vision was 6/6 and a complete field.

A study of the ocular manifestations in a case of hysteria. (Patient exhibited in conjunction with Dr. S. I. Schwab.) By Dr. John Green, Jr.

Through the kindness of Dr. Schwab, I have been enabled to make an extended study of the hysterical ocular manifestations in this patient.

M. R., aged 32, native of Roumania, came under my observation February 24, 1907. For several months he had suffered

severe pain through the temples and bridge of nose. This pain had recently grown more severe. About three weeks ago he first noticed doubling of objects, diplopia. At first only occasional but now fairly constant.

The patient's face, except for a slight frown, was peculiarly expressionless. The mask-like aspect was accentuated by a drooping of the lids, slightly more pronounced on the left side. The lids can be raised but not to their full extent, and the effort at elevation can only be sustained for a few seconds. In consequence, the patient is obliged to throw his head well back in order to see, very much after the fashion of an individual with bilateral ptosis. The facial aspect is very characteristic and has been observed unchanged in all his attacks.

On directing the gaze straight forward, the left eye appears straight, but quickly changes to 10° convergence, with complaint of diplopia. The mobility of each globe is unrestricted in all parts of the field of fixation. On looking up slight vertical nystagmus is developed.

A study of the double images seemed to indicate a paresis of the left abducens. Ophthalmoscope showed normal eyegrounds. Form fields were concentrically contracted in moderate degree.

O. D. H. .75V.=16/12. O. S. H. .75V.=16/12.

At this time I was inclined to regard the case as a beginning retrobulbar neuritis associated with paresis of the left abducens. The patient entered the Jewish Hospital in Dr. Schwab's service and I did not see him again until March 30, 1907, five weeks later.

O. D. V.=3/75, with —4. sph. 18/75.

O. s. V.=3/96, with —4. sph. 18/120.

Eyegrounds normal. Fundus details clearly seen with —3. sph. behind mirror (accommodative spasm).

Form field very much contracted—with partial central scotoma, R. and L.O.S. convergent 10°.

Next observation five months later, August 18th. The improvement in the patient's appearance was so remarkable that I did not recognize in him the woe-begone individual of my first two observations. He was indeed the very picture of health. Every trace of his former ocular troubles had vanished.

R. V.=16/12. L. V.=16/12.

Eyegrounds normal; details visible with plus 1 sph. No diplopia. Fields full.

The developments in the case led me to reject my first view

of a retrobulbar neuritis and to incline to the diagnosis of hysteria.

I did not see the patient again until Jan. 30, 1908. Through the kindness of Dr. Schwab, I have been able to make a more extended study of the case, eliciting various phenomena which can hardly be explained on any but an hypothesis of hysteria. The facial appearance is precisely as on February 24, 1907.

Both orbicularis muscles exhibit frequent slow contraction, especially well marked in the fibres of the lower lids. Narrowing of palpebral fissures L. and R. The patient can with an effort raise both upper lids, though not to the full extent. If, during this act, the patient be directed to gaze vacantly into space, both globes converge, the right 10°, the left 15° and diplopia occurs. Pupils equal, light and convergence reactions normal.

R. V.=18/75. L. V.=18/75. Not improved by+or—sph. glass.

The red glass test developed a homonymous diplopia in all portions of the field of refraction, the images remaining at the same level. The separation of the images is least, however, in the right field and increases progressively as the gaze is carried to the left. With the candle flame at 3 m. the separation of the images to the right is 60 cm., to the left 150 cm.

Form fields again show concentric limitation.

Color fields show a partial inversion, more noticeable R. than L. The field was also plotted on a campimeter at 30 cm., and 90 cm., disclosing the existence of a typical tubular field (Roehrenfoermiges Gesichtsfeld).

A searching examination of the fundus (under euphthalmin) failed to disclose any abnormality.

With the left eye screened, an ivory rule held vertically or horizontally at a distance of 3 m. is declared to be doubled (monocular diplopia). The images separated 3 cm. As the rule is brought nearer, the images approach one another and fuse one meter from the eye. With the right eye screened, a similar phenomenon is observed. Carrying this test a step farther, I screened the left eye and found that by interposing a vertical prism in such a manner that the base bisected the pupil. A quadrupling of images at once resulted with a prism, base in (similarly placed with respect to the pupil) there occurred a quadrupling of the horizontally held rod.

Feb. 3, V. =18/38 either eye.

A few moments later V.=18/12 O. D.; =18/15. O. S.
O. D. p.p. 16 cm. O. S. p.p. 16 cm.

The double images are precisely as at former examination. No monocular diplopia.

This examination appears to have coincided with the subsidence of the attack. As the patient declares that from this time up to February 25th he was not conscious of any ocular trouble. On the latter date he resumed his employment. (That of painter.) While standing on the rung of a ladder two feet up, he suddenly felt as if he had received two hammer strokes on the top of his head and fell to the ground. He was probably momentarily unconscious. Immediatley he became aware of fogged vision and diplopia.

Examination, February 26th.

There is a constant fine tremor of the fibres of the orbicularis. Both globes are in a position of slight convergence, which becomes more noticeable when the eyes are widely opened.

On attempting to look to the right, the left globe without hesitation passes through a full arc. The right, on the contrary, comes to a stop 15° beyond the median line. If the patient is then urged to exert every effort, the right globe resumes its interrupted dextroversion and by a series of nystagmic twiches, attains a nearly full excursion.

A precisely similar phenomenon is observed in the left eye in the effort at laevoversion.

Pupils equal. React sharply to direct, sluggishly, to consensual stimulation. Without change in illumination, or convergence effort, both pupils are observed suddenly to dilate and as suddenly to contract, remaining for several seconds motionless in moderate miosis (2mm.) which is again succeeded by mydriasis.

R. V.=3/75; with—5 sph. 18/75.
L. V.=3/48; with—5 sph. 18/60.

Double images as before.

February 27th.—Screening the left eye, an object is placed on the table to the patient's left. On attempting to pick it up, his hand invariably hovers in the air to the right of the object, i. e, he undershoots the mark. With the right eye screened, an object placed to the patient's right, is felt for to the left of the object.

V. is now reduced to 3/192 O. U. not improved by any + or — sphere.

March 17th.—Visited at Jewish Hospital.

Both pupils have now become very sluggish to light. While directing a pencil of light into the eye, it was observed that the pupil dilated widely (paradoxical pupillary reaction).

Diagnostic comment.—Permit me to consider, in some detail, the various phenomena. First as to vision: This ranged from 16/12 (O. U.) hyperopia .75 D. to 3/192 O. U. That the diminution was due in part to accommodative spasm is evident from the examination of February 26th, when the interposition of a —5 sph. raised vision in R. from 3/75 to 18/75, in L. from 3/48 to 18/60. At this time the fundus details did not become clear until a —5 was placed behind the mirror. On February 27th, when the vision had fallen to 3/192 O. U.—spheres up to 20 D. did not improve. We cannot escape, therefore, the idea of a true hysterical amblyopia. Was the partial ptosis due to paresis of the levators, or spasm of the orbicular muscles? The latter seems the more likely on the following grounds: (1) the presence of fine fibrillary twitchings in the orbicularis fibres; (2) the patient can by a strong effort of the will elevate the lids to some extent, without invoking the aid of the occipito-frontalis muscle. (3) There is no elevation of the eye-brows on separation of the lids.

The question arises, are we dealing with a convergence spasm and spastic strabismus, or with a paresis of the abducens, or with a paresis of the abducens on one side, and a spasm of the internus on the other? The behavior of the double images in convergence spasm is characteristic. They have the same separation on looking to the right, as when the patient looks to the left. But in the present case, homonymous diplopia, present in all parts of the lateral field, is least to the right and increases progressively as the object is carried to the left. On the other hand, there is hardly any limitation to outward movement of either eye, when the patient is urged to do his best. Confirmation is furnished by the greater rapidity and range of the primary version to the right of the left eye, and vice versa. Let it be remembered, also that with one eye screened, the patient undershoots an object situated within the field of action of the affected muscle. The reason for this, as stated by Duane, is, "that the patient underestimates the distance that the eye travels, since he is aware only of the effort that he is putting forth in order to look at the object, and with an overacting muscle this effort is less than normal."

All things considered, I am inclined to the belief that the condition is one of true convergence spasm, possibly associated with paresis of the left abducens.

Monocular diplopia was observed only during accommodative spasm. The basis of this phenomenon, according to Parinaud, is a spasm of the ciliary muscle. If the spasm is complete, the eye is adopted for a fixed point. On either side of this fixed point diplopia appears, as the result of structural defects in the crystalline lens. De Schweinitz quotes Parinaud as follows: "The disposition of the anterior portion of the lens in three segments favors its changes in curvature, but at the same time, owing to their separation from one to another by layers of amorphous material, each section possesses a focal point of its own, capable of producing images distinct from that yielded by the lens as a whole. The condition of spasm by increasing the convexity of the anterior surface of the lens, serves to emphasize the diplopia arising from the structural defects described. Pierre Janet believes that occasionally this phenomenon is to be ascribed to psychic origin."

In the present case the doubling of the double images (quadrupling of images) lends support to the theory of Parinaud.

Other phenomena described in the report—contracted fields (on one occasion with partial central scotoma), partial inversion of the color fields, the presence of tubular fields and the paradoxical pupillary reaction—are mentioned as points of evidence in support of the conception of the essentially hysterical nature of the ocular phenomena.

LLEWELLYN WILLIAMSON, M.D.,
Section Editor.

THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Thursday, October 15th, 1908.

The President, MR. MARCUS GUNN, in the chair.

CARD SPECIMENS.

A Spectroscopic Test of Color Vision.—Dr. Maitland Ramsay.

The instrument shown by Dr. Ramsay is designed to test the color sense by means of the pure spectral colors from a diffraction grating. It consists of a rectangular brass box 12½ in. long, 3 in. broad, and 1½ in. deep, mounted on a double metal support resting on a wooden base, and inclined at an angle convenient for ordinary vision.

An eyepiece at the upper end, magnifying about 10 times, has

placed at its focus 2 diaphragms with slits which allow only one thin line of color to be visible in each. At the lower end light enters through 2 slits which are protected from dust by a slip of ground glass, the width of the slits being graduated by means of adjustment screws. In this way the brilliancy of the spectrum can be diminished or increased at will, the difference being measured by the numbers on the graduated screw heads, which indicate tenths of a millimetre in the size of the slits. The interior of the box is carefully blackened, and in the middle is placed a diffraction grating (containing 14,438 lines to the inch), on either side of which is a collimating lens.

The result of the passage of a ray of light through the lower slits, the grating and the lenses, is that 2 spectra of considerable dispersion are found in the focus of the eyepiece, the one above the other. Either or both spectra may be moved from side to side by moving shutters controlled by screws, the degree of movement being shown on 2 dials at the lower part of the instrument, which are graduated in wave lengths, and also marked with the chief lines of the spectrum. The examiner having set a definite colour over one of the slits the patient is instructed to move the spectrum opposite the other slit by means of the screw until he finds the color which he thinks corresponds to the one fixed as the test. The indices on the dials are watched in order to ascertain the degree of correctness of the matching.

At the upper end of the box is a rotary diaphragm perforated by three circular apertures, any one of which can be turned into position in place of one of the slits. When seen through the eyepiece the diameters of the circles are equivalent to 1, 2, and 4 mm. respectively. This arrangement, which permits only a single circular spot of color to be seen, enables the correct naming of the colors to be tested as well as the correct matching. If a double-image prism be adjusted over the eyepiece, this spot of color is doubled, and by rotation of the prism, the second (or eccentric) color spot can be made to revolve round the stationary one, like a satellite round a planet, and this arrangement forms a convenient test for a central color scotomata.

A case of Unilateral Ptosis, treated by the Motais operation very slightly modified.—Mr. Sydney Stephenson.

A little girl, aged 2, was first seen on September 3rd, 1907, suffering from incomplete ptosis of the left eye. The movements

of the eyeball were good, no synkinesis was noted, and there were no associated deformities.

On September 24th, 1907, the superior rectus was divided into 2 parts, an outer and an inner; the outer division was stitched to the upper lid between the skin and the orbicularis muscle on the one hand and the tarsus on the other. The present appearance of the patient, 1 year after the operation, is entirely satisfactory; the lid is well raised, there is no squint, and the eye closes voluntarily, although it remains partially open during sleep.

Microscopical Sections from a case of Tubercular Iridocyclitis in a man aged 75 years.—Mr. A. Ogilvy.

This case was first seen in November, 1906. The patient complained of severe pain in the left eye, radiating over the forehead and vertex; this condition had existed for 3 weeks, during which time the eye gradually became blind. On examination the anterior chamber was found full of greenish-yellow material like pus, and the iris was retracted.

The eye was enucleated, and the pathological examination undertaken by Dr. J. Walker Hall. The sections showed large collections of round cells embedded in fine connective tissue stroma, amongst which were many giant cells. Acid fast bacilli showing the characteristics of tubercle bacilli were also found.

Bilateral Traumatic Choroiditis.—Mr. J. B. Lawford.

This was a case of a man who had received slight injuries to both eyes; that in the left had been caused by a chestnut 3 years previously, and was followed by permanent defective sight. The blow in the right eye was caused by his thumb 2 months previously, and the vision immediately afterwards was found to be defective but has improved considerably since.

Ophthalmoscopic examination of the left eye showed cicatrical changes in the choroid and retina, limited to the macular region and the area between the optic disc and macula. In the right eye there was a recent hæmorrhage stretching horizontally outwards from the optic disc beyond the macula, accompanied by some pigmentary disturbance.

A drop of oil in the Anterior Chamber.—Mr. A. C. Hudson.

A man, aged 27, received an injury to the right eye from a

rivet. A drop of castor oil was instilled immediately after the accident. On examination a horizontal wound of the cornea was found to which the iris was adherent. The application of a pad and bandage, together with the use of atropine, caused the iris to go back, and as soon as the anterior chamber was reformed oil drops could be seen at each extremity of the horizontal meridian. For 15 days they were fixed, but after that became movable, subsequently coalescing into one large drop at the upper part of the anterior chamber. There are present, 4 months after the injury, three drops, which are distinctly movable. The vision is good, the tension normal, and the eye quiet.

Reticular Keratitis.—Mr. A. C. Hudson.

Isabella M., 56, under the care of Mr. Morton at the Royal London Ophthalmic Hospital.

The grandmothers of the patient were sisters and the father and mother cousins, and their family consisted of 3 male and 8 female children, and no eye disease was found in any branch except that the mother, at 50, complained of a "spider's web over the left eye."

The patient had had good health, except for a slight hemiplegic attack, with some loss of sensation, in February, 1900.

In July, 1900, a peculiar form of striate keratitis was noticed in each eye, and the vision in the right was 6/9, that of the left being 6/6. There was a defect in the right upper quadrant of each field, and Dr. Taylor considered that there was a lesion either in the occipital lobe or posterior part of the internal capsule on the left side.

There had been gradually increasing failure of sight both for distant and near vision for the last 5 years.

The central region of each cornea is occupied by a mycelium-like striation, whose branches anastomose together, forming a fine network. The individual lines vary in thickness, and are set in different planes in the corneal tissue, but are on the whole nearer the anterior than the posterior surface. In addition to this there is, in the central area of the left cornea, exceedingly fine striation, which is also present in the right, though much less marked. The vision in both eyes at the present time is 6/36, and the corneal sensation unaffected.

Case illustrating the treatment of Follicular Conjunctivitis by special method; one eye treated, the other untreated.—Mr. C. Wray.

In this case the left eye was merely treated by the application of Lotio Hydragyri Perchloridi 1 in 10,000; while the right was subjected to the special treatment. This consisted in crushing and massaging the follicles between the finger and the thumb, followed by the instillation of 20 per cent. argyrol and adrenalin 1 in 1,000. After a little over 3 weeks' treatment the right conjunctiva was cured, while the other remained unchanged.

PAPERS.

A case of Dipterous Larva in the Anterior Chamber.—Messrs. Frank G. Thomas and J. Herbert Parsons.

W. E., a boy aged 2¾ years, was first seen on March 18th, 1908.

There has been a history of some vague trouble in the left eye for several weeks, but it became definitely red and painful 3 weeks before coming under observation. There was no history of injury, nor any discharge from the eyes or nostrils, neither had the child suffered from any illness. A thorough examination under an anæsthetic showed some slight ciliary injection, cornea perfectly clear, anterior chamber slightly deepened and the aqueous faintly turbid. The iris was discolored and its texture indistinct; the pupil was irregular and partially occluded with brown lymph. Lying on the iris was a small, round, segmented "worm," the head near the angle of the anterior chamber in the lower and outer quadrant, the tail disappearing into the angle in the upper and inner quadrant. The body, curved between these two points, measured about 12 or 13 mm. in length and about 2mm. in thickness. There appeared to be eight clearly defined segments, not quite so distinct towards the tail; and on magnification a delicate covering of connective tissue could be made out over the body and reflected on to the surface of the iris. No movements were observed.

The eye was enucleated, and microscopical sections were prepared by Mr. Coats, who described, in addition to the presence of the larva, signs of inflammatory exudation in the region of the iris, anterior chamber, and Schlemm's canal.

The sections containing the head of the larva were submitted to Dr. Shipley, of Cambridge, who pronounced it to be the maggot of either a Blow Fly or a Sarcophaga Carnaria. This oc-

currence of a Dipterous Larva in the human eye appears to be unique, whilst veterinary records contain only one case in which the larva of the Hypoderma was observed in and removed from the eye of a horse.

The mode of entry into the eye is purely conjectural. Both the Blow Fly and the Sarcophagidæ deposit their eggs, or living larvæ, in the nostrils and conjunctival sac, in purulent conditions. From these places the larvæ might work their way through the nasal duct into the lachrimal artery and thence by way of the central retinal or of a ciliary vessel into the eye. On the other hand, the more direct route from the conjunctival sac through the external tissues of the eyeball is a possibility.

Again the larva may have been an immature form of the Hypoderma Lineator of the ox, when its presence in the eye is more easily understood, since these larvæ normally exist in the subcutaneous connective tissue, whilst its recorded presence in the anterior chamber of a horse's eye proves its capability of entering that organ.

Dr. Mackay mentioned a case which had come under his notice presenting similar appearances to the one described, and he hoped to have the opportunity of bringing it forward on some future occasion.

Major R. H. Elliott spoke of the fairly frequent occurrence of "worms" in the eyes of horses in Madras and the crude methods used for their extraction. The parasites were usually very active, moving in the anterior chamber with great rapidity and sometimes passing into the posterior chamber. They could be easily removed by making a keratome incision and opening it by pressing on its lower lip when the larva was seen to approach its vicinity.

Six Generations of Piebalds.—Mr. N. Bishop Harman.

Mr. Harmon showed the genealogical tree of a family in which patches of depigmentation in various parts of the body had been transmitted from generation to generation for six generations; and entered into the question as to how far the facts in this case bore out the Mendelian theory of inheritance.

MALCOLM L. HEPBURN.

ABSTRACTS FROM MEDICAL LITERATURE.

By W. A. Shoemaker, M.D.,
St. Louis, Mo.

A STUDY OF THE OCULAR MANIFESTATIONS OF SYSTEMIC GONORRHŒA WITH REPORTS OF CASES OF THIS NATURE.

W. G. M. Byers (*Studies from the Royal Victoria Hospital,* Montreal, Vol. 2, No. 2) has studied this subject very thoroughly, reviewing the history and literature carefully, and offers the following conclusions and principal points of the study:

1. The early British and French writers were the pioneers in the development of our knowledge of gonorrhœal ocular metastases. From the first, gonorrhœal iritis has been uninterruptedly recognized by the profession; but after 1850 the general practitioners alone continue to believe in a metastatic conjunctivitis. The specialists, influenced especially by the work of Piringer, went to the opposite extreme and accepted only the theory of direct infection; but they have been again forced into recognizing metastatic conjunctivitis through the bacteriological investigations which have followed Neisser's discovery. The occurrence of numerous other conditions in the eye, and the phenomena which gave rise to the old theory of "retropulsion," have been made easier to understand through the better appreciation of the systemic phases of gonorrhœa of recent years.

2. Systemic gonorrhœa most commonly occurs in males, in those cases in which the posterior urethra and the contiguous structures are involved; but nothing definite is known in regard to the factors which underlie the undoubted predisposition of certain individuals to this disease.

The accumulating pathological evidence seems more and more to show that the gonococci themselves, and not their free toxines or the secondary or mixed infections, are responsible for the local manifestations.

Metastatic inflammations of the eye, of gonorrhœal origin, are marked, in general, by uncertainty and irregularity as regards the time of their occurrence, the extent to which the parts are involved, the severity of their symptoms, and their course and behavior; by their close association with metastases of like origin

in other parts of the body; and by a marked tendency to relapse, and to recur with fresh gonorrhœas.

Ocular inflammations are often the first manifestations of systemic gonorrhœa, and there is every reason to believe that they frequently form the sole expression of this condition.

Patients with systemic gonorrhœa should be treated as those actually suffering from an infectious disease; and, as there are grounds for thinking that gonorrhœal metastases pick out points of lessened resistance, excessive use of the eyes, while the systemic infection is in progress, is to be depreciated.

3. Metastatic gonorrhœal conjunctivitis is a well established clinical entity. The figures of Fournier and of White in regard to its frequency have been often misquoted; but it will probably be oftener met with now that it has gained for itself a wider recognition. It occurs at any time during the course of a systemic gonorrhœa, but apparently more often than the other eye conditions as an initial manifestation. The infection is almost invariably bilateral, and both eyes are usually simultaneously involved. The objective appearances, and the subjective symptoms differ little, if at all, from those of any of the so-called acute "catarrhal" inflammations of the conjunctiva. The discharge is typically slight in amount, and almost always mucoid in character. Pure cases run their course in two weeks; but in thirty per cent. of the patients the inflammation is complicated by affections in other coats of the eye. Some of these, at least, are of the nature of deep-seated metastatic inflammations which throw light on the true nature of the conjunctivitis. Relapses occur either alone, or, more often, in association with affections of other parts of the globe.

4. Though it is impossible at the present time to determine its exact mode of development, a keratitis occurs in association with systemic gonorrhœa which is typically of a multiple and superficial nature, and commonly symmetrical in character, and central in situation.

5. The deep-seated congestion sometimes observed in metastatic conjunctivitis is often only an expression of an inflammation of the anterior structure of the globe, actually present or in process of development. The cases of pure sclero-conjunctivitis, which apparently do occur, ought to be differentiated from metastic conjunctivitis, and classed by themselves.

6. In every so-called iritis the pathological process is by no means limited to the iris, but extends at least to the adjacent

division of the uveal tract. It is justifiable, and perhaps even advisable, to discard the word iritis, and substitute the terms mild or severe iridocyclitis, the better to express the character and extent of the changes known to be present in these cases.

7. There are no figures to show what part the gonococcus plays in the production of the inflammations of the uveal tract, viewed collectively; but, taking the statistics for iritis as an index, it would seem that the percentage of cases, attributable to this organism, varies as the result of differences in the social and hygienic conditions of the places in which the statistics are collected.

While the gonococcus apparently finds its most favorable environment in the vascular coat of the eye, the exact relative frequency with which the various structures of the globe are visited by gonorrhœal metastases remains to be determined. Likewise, no definite idea can, at the present time, be formed of the usual extent, duration, and severity of the inflammations of the uveal tract, or of numerous special features of these conditions. Writers, generally, have been too loose in their nomenclature, and too many reports are lacking in essential details and exact description, to allow of a determination of these points.

Arranged according to types, one finds that all the common forms of uveal inflammation have been attributed to systemic gonorrhœa, though the statements of Fournier in regard to the frequency of serous cyclitis (aquo-capsulitis) are not borne out by a study of literature.

Generally speaking, metastatic gonorrhœal affections of the uveal tract show a tendency to be double-sided in the first as compared with the second and later attacks, and to relapse, and to recur with fresh gonorrhœas. They precede, or follow, or break out simultaneously with other manifestations, or form the sole expression of the systemic infection; but they are marked by no special features, except that swellings of any kind in the iris tissue are never observed. Gelatinous exudations are more indicative of the severity of these inflammations than of their origin. An associated metastatic conjunctivitis is suggestive. The purulent forms, which often show no sharp line of demarcation from the plastic, are marked by an extraordinary tendency to recovery.

8. The metastatic gonorrhœal inflammations of the optic nerve and retina commonly take the form of a diffuse, and scarcely measurable neuro-retinitis, associated, at times, with considerable

retinal œdema. The cases follow the rule, that when the nervous apparatus of the eye is solely involved the affection is bilateral, but when it is implicated along with the uveal tract the neuro-retinitis is unilateral in character. The pathological evidence favors the bloodvessels rather than the lymph spaces as being the principal route for the infection in these conditions. The prognosis must be guarded, though, generally speaking, the outlook is good.

9. The cases of dacryoadenitis, which have been attributed to systemic gonorrhœal infection, conform to what is known of inflammation of the lacrimal gland in general, namely, that while the cases caused by direct extension are generally unilateral and go on to suppuration, those produced by metastasis are usually bilateral in character and end in resolution.

DEVELOPMENTAL DEFORMITIES OF THE CRYSTALINE LENS.

E. Treacher Collins (*Jr. A. M. A.*, Sept. 26) divides the development of the lens into three stages as follows:

1. The down growth of a fold of cuticular epiblast, which is separated in the form of a hollow vesicle from the rest of the surface epiblast by intruding mesoblast, and becomes surrounded by a hyaline capsule.

2. The lengthening out of the cells composing the posterior layer of the vesicle until they fill its entire cavity. These are the first formed lens fibers and exist as the most central part of the fully developed lens.

3. The proliferation of the cells lining the anterior capsule and their transformation at the sides of the lens into lens fibers. A transformation which is effected by their lengthening out anteriorly and posteriorly, so as to encircle the fibres developed from the posterior layer, lines of sutures resulting where their ends come in contact. This laying on of fresh fibres laterally goes on throughout life, but its rapidity is lessened as life advances by the increasing intracapsular tension tending to check the proliferative activity of the cells.

He summarizes his observations on the development of the lens capsule thus:

A. The lens capsule is the product of the epithelial cells lining it.

B. The time during which the posterior capsule of the lens has to complete its development is exceedingly short, as the cells

forming the posterior layer of the lens vesicle soon lengthen out into lens fibres and become separated from the capsule.

C. Congenital gaps in the posterior capsule are met with which are bridged across by fibrous tissue formation in the anterior part of the vitreous.

D. This fibrous tissue formation in the vitreous, which sometimes contains bloodvessels from the central hyaloid artery, may extend through the gap in the posterior capsule. An admixture of mesoblastic and epiblastic tissue within the lens capsule resulting.

E. This fibrous tissue formation at the back of, or within the lens capsule, accounts for those cases of exceedingly tough, shrunken, congenital cataracts which show little tendency to absorb after discission.

F. The protrusion of lens substance through a congenital gap in the posterior capsule, or the bulging of a congenitally thin posterior capsule, offers the best explanation of cases of congenital posterior lenticonus.

Concerning the defects which occur during the second stage of the development of the lens he calls attention to a form of congenital cataract which he thinks can be differentiated from other forms of congenital cataract and in which an arrest of development of the nucleus seems to best explain the pathologic appearances. This form has been spoken of as disc-shaped cataract and has somewhat the appearance of an anterior polar cataract. The characteristic appearance of the disc-shaped cataract is the presence of a dense, white opacity, circular in form and filling the whole of the undilated pupil, having somewhat the appearance of a shrunken opaque lens, but under mydriasis the periphery of the lens can be seen to be clear. This central opaque part of the lens can be picked off with a discission needle, when it will drop to the bottom of the anterior chamber, leaving an opening in the lens which gives very much improved vision.

His summary of the defects which arise during the third stage of development in the lens is as follows:

1. The formation of congenital Morgagnian cataract from failure in development of the lens fibres laid on laterally and their replacement by opaque albuminous fluid.

2. Congenital displacement backward of the nucleus of the lens, associated with a defective growth backward of laterally developed lens fibres.

3. Congenital fusiform axial cataract (of Knies and Vossius), due to adhesion of the nucleus of the lens to the anterior and posterior capsule and defective growth forward and backward of the laterally developed lens fibres.

4. Axial opacities radiating forward and outward from the nucleus and located in the lines of sutures between the lens fibres laid on laterally, which run in that direction.

The following suggestions concerning the treatment of congenital cataract are offered:

First. To wait until a child is 10 months old before operating. At an earlier age the cornea is so small and the anterior chamber so shallow that the necessary instrumentation cannot be so satisfactorily carried out as in the more fully developed eye. Moreover, the amount of aqueous humor is so small that it does not suffice for the solution of the liberated lens substance.

Second. In some cases in which the pupil is small and does not dilate well with atropin it is best to commence with an iridectomy.

Third. In nearly all cases it is well to begin with a needling. For valuable information can be obtained by its means as to the thickness of the capsule and consistency of the lens should it fail to liberate much lens matter to the action of the aqueous.

Fourth. If the cataract is a dense, white, anterior polar one, set in a ring of clear, or partially clear, lens substance, and apparently flattened from before backward (the so-called disc-shaped cataract), then an attempt should be made to separate the central white opacity with a needle and let it fall into the anterior chamber. Two needles are sometimes required to effect this.

Fifth. If on pricking the capsule, milky-white fluid escapes into the anterior chamber (congenital Morgagnian cataract) it is well at once to evacuate this fluid, for fear of increased tension ensuing.

Sixth. In some cases of congenital cataract the whole lens and capsule can be removed in a most satisfactory way by grasping it with forceps. Very often, however, such a procedure is followed by escape of vitreous. It is difficult to differentiate which cataracts can be safely dealt with in this manner. They generally seem to be complete cataracts with a tough capsule and lens matter of a gelatinous consistency.

Seventh. If after needling and some absorption of liberated

lens matter, a dense, tough, white, fibrous-looking membrane remains, there is probably some atypical development of the anterior part of the vitreous. An attempt had then best be made forcibly to displace the membrane downward and backward out of the axis of vision.

THE POST-OPERATIVE HISTORY OF SIXTY CASES OF SIMPLE CHRONIC GLAUCOMA.

Charles Steadman Bull (*Trans. American Oph. Society,* 1907) gives the following brief resume of the results obtained from iridectomy on sixty cases of simple chronic glaucoma:

1. Temporary improvement of central vision after iridectomy in 14 eyes.
2. No permanent improvement of vision in any eye.
3. No impairment of central vision in any eye.
4. Slow but steady failure of central vision after iridectomy in 94 eyes, or about 70 per cent., during a period of five to eleven years.
5. Maintenance of existing vision after iridectomy in 21 eyes for a period of years, the longest being eight years.
6. Immediate diminution of tension after iridectomy in 112 eyes.
7. Permanent diminution of tension after operation for a period of three to eleven years in 24 eyes.
8. No apparent effect produced on tension by operation in 3 eyes.
9. No immediate increase in narrowing of the field after operation in any eye.
10. Slow but steady diminution of the field as time elapsed in 92 eyes.
11. Absolute glaucoma the final result in 16 eyes.
12. Apparent arrest of the progress of the disease as to central vision, condition of the field, and tension, in 21 eyes.

He states his conclusions thus:

My own experience in the operative treatment of chronic glaucoma has not led me to regard this method of treatment as a certain means of cure, since in the great majority of the cases, the operation is not followed by the hoped-for success, while in a considerable number of the patients there is immediate impairment of vision induced, and in some rapid blindness. We must change our mental attitude and learn to look on iridectomy,

not as a means of cure, but as a method of either arresting the course of the disease, or of delaying its progress. Furthermore, it is not so much the operation which arrests the disease, but the early performance of the operation.

The view that iridectomy should be regarded as a last resort in chronic glaucoma should be stamped as absolutely wrong, for experience teaches that it is very bad surgery.

The operative effect of iridectomy in simple chronic glaucoma is more certain and immediate, the earlier it is done. The slightest narrowing of the field of vision, whether for form or for color, associated with failure of central vision, increase of tension, and cupping of the disc, demand immediate operation. Furthermore the beneficial effect of an iridectomy stands in direct proportion to the increase of tension. An early iridectomy while the iris is still mobile, the field but little contracted, and the cupping of the optic disc slight, very often arrests the progress of the disease for a long period of time. Done early, it offers better prospects for the arrest of the process for a long period of time, than other methods of treatment now at hand.

JUVENILE TABES DORSALIS.

S. Stephenson (*Lancet,* May 16) reports five cases and summarizes the conclusions of Cantonnet (*Arch. d'Ophthal.,* Nov. 1907) formed on a study of 90 cases of juvenile tabes, showing evidences of syphilis, inherited or acquired, in 65.6 per cent., which is as high as in adult tabes. Stephenson believes that possibly a large proportion of the cases of children, in whom the only definite findings are amblyopia and atrophy of the optic nerves, are really cases of juvenile tabes, and emphasizes the necessity of a careful neurological examination in such instances in order to make a more definite diagnosis. Bilateral optic atrophy with loss of knee jerks, or paralysis of an ocular muscle with loss of the deep reflexes in a syphilitic subject would justify a provisional diagnosis of juvenile tabes.